WESTON SM MANAGERS DESIGNERS CONSULTANTS
100 Atlanta Technology Center, Suite 120, 1575 Northside Drive, NW,
Atlanta, GA 30318 • (404) 352-4147 • FAX (404) 352-0659

6662

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

MEMORANDUM

TO: R. Donald Rigger, OSC
EPA, Region IV

FROM: Scott W. Dunbar
TAT, Region IV

THRU: Conley B. Phifer CBP
TATL, Region IV

SUBJECT: Clark Brothers Warehouse
Pesticide Removal Site
Albany, Dougherty County, Georgia
TDD #04-9006-10-3292
TAT #04-F-04200

DATE: 24 August 1990

SITUATION

This report has been prepared in accordance with the requirements of Technical Direction Document (TDD) #04-9006-10, assigned to the Roy F. Weston Incorporated Technical Assistance Team (TAT), by Region VI of the U.S. Environmental Protection Agency (EPA).

TAT was tasked by OSC Rigger to provide technical support in cost accounting, documentation, air monitoring, ERCS monitoring, and safety, at the Clark Brothers Warehouse Pesticide Removal Site, Albany, Dougherty County, Georgia. The site had been addressed previously (TDD# 04-9003-41) and a report issued on 29 March 1990, on all the actions taken until that date. The tasks undertaken previously included inspection, inventory, and sampling.

BACKGROUND

In early December 1985, ICP Chemical requested Clark Brothers Warehouse to store numerous containers of Grain Fumigant #2 (82.3% Carbon tetrachloride, 16.3% Carbon disulfide, 1.0% Sulphur dioxide, 0.4% Pentane). The shipment was received on 31 December 1985. After not receiving payment for storage, Clark Brothers attempted to contact ICP Chemical and found that they had filed for bankruptcy. A further investigation revealed that the materials had been banned from shipment on 1 January 1986. Clark Brothers attempted to have the shipper handle disposal, but was unsuccessful.

EPA was contacted by Mr. Chet Clark in April 1988. OSC Rigger and TAT conducted an investigation of the warehouse and determined that there was not an immediate threat. OSC Rigger instructed the Clarks to contact Air Pesticide and Toxic Substance Division within EPA, for assistance. ICP Chemical had a previous history of abandoning materials in a similar manner.

On 29 March 1990, EPA was informed that the Grain Fumigant #2 containers were leaking and an investigation was conducted by OSC Kopotic and TAT. The investigation confirmed that some of the containers had deteriorated and materials had been released to the environment.

SUMMARY

On 30 July 1990, OSC Rigger, TAT, and ERCS personnel mobilized to the site, to stage, bulk, and dispose of 612 one-gallon cans, 114 five gallon pails, and 62 fifty five gallon drums. ERCS made preparation for a tanker truck that was scheduled to be on site the following day. The drums were staged outside the storage building and the pails and cans were repositioned to facilitate safe handling. All product handling was conducted in Level "B" personal protective equipment (PPE).

The following day, 31 July 1990, ERCS began bulking the cans into two 85-gallon recovery drums. During the bulking process, approximately 100 cans and 2 pails were found to be empty. TAT conducted real time air monitoring with carbon tetrachloride colormetric detection tubes (CDT) and a photo ionization detector (PID). Air monitoring from the perimeter with the CDT indicated <2 ppm and the PID indicated 1 - 20 units above background at approximately 10 feet from the open containers.

High temperatures and humidity at the site created extremely hot working conditions with little breeze. Due to the heat stress factor involved in level "B" PPE operations, ERCS personnel were encouraged to take frequent breaks and drink plenty of fluids.

Early on the afternoon of 31 July, a Nortru tanker truck arrived on site and pumping operations began. Due to the low boiling point of carbon tetrachloride (the main constituent of Grain Fumigant #2) vapor locks kept forming and pumping operations were slow. Air monitoring was continuously conducted in the decon area and from the perimeter. The PID detected readings of 1-5 units above background at the perimeter, depending on wind direction and speed. When pumping operations had concluded, approximately 3700 gallons of Grain Fumigant #2 had been transferred to the tanker. The Nortru tanker departed the site for the disposal facility, Petro-Chem Processing Inc., Detroit, MI. The tanker was not loaded to its full capacity due to the weight of the product and road restrictions. Thirteen 55 gallon drums (unopened) were left at the site for future pickup.

On 1 August 1990, The OSC, TAT, and ERCS returned to the site. ERCS crushed all of the empty containers with a 580 backhoe. The crushed empty cans, pails, and drums were loaded into a Barton Environmental 20 cubic yard roll-off box and transported by Barton Environmental to BFI's landfill in Fayetteville, Georgia.

On 13 August 1990, ERCS returned to the site to load the remaining 13 fifty-five gallon drums on a Petro-Chem box truck for transportation to the Petro-Chem disposal facility in Detroit, MI.

CONCLUSION

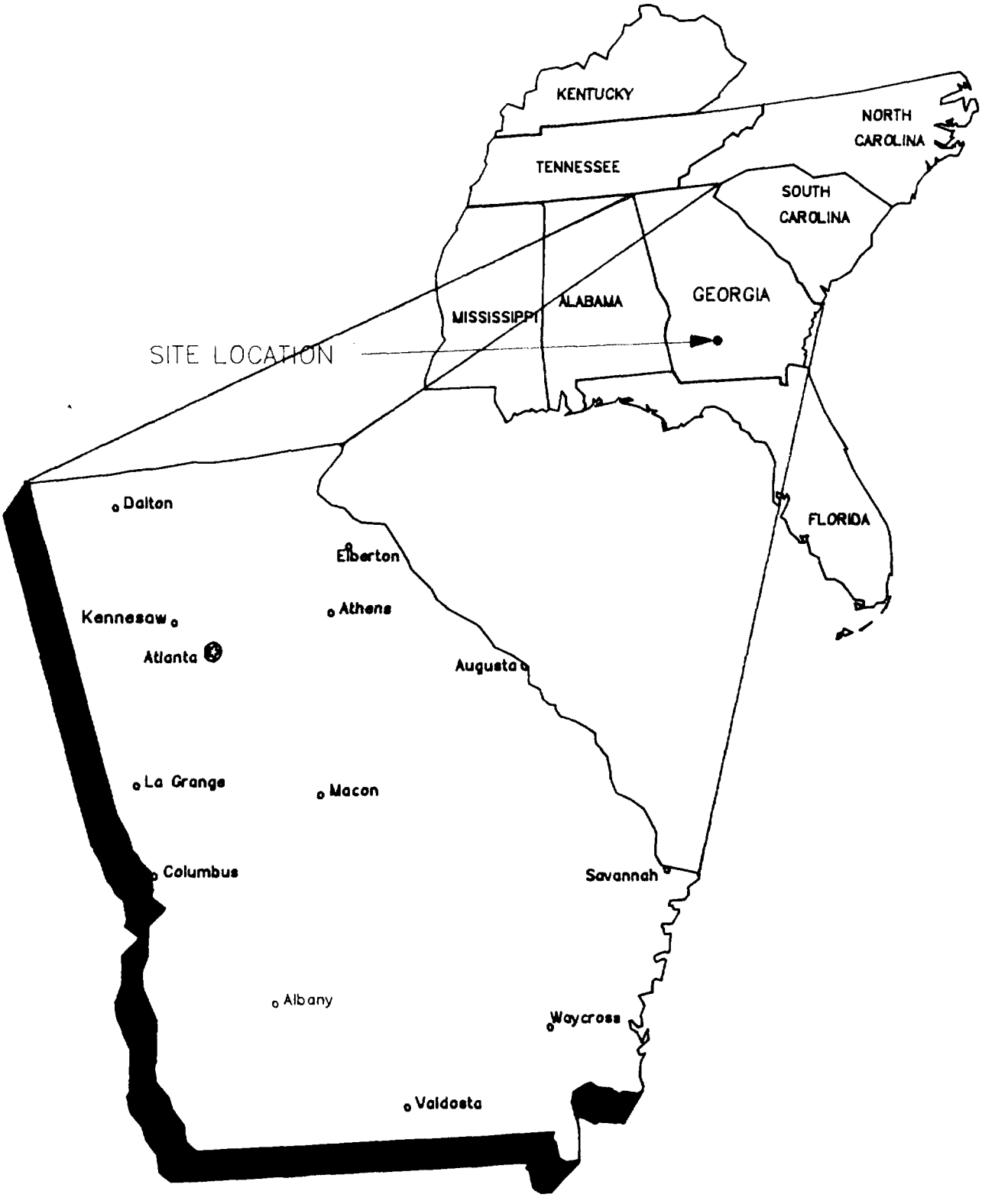
Having properly disposed of all the Grain Fumigant #2 at the site no further federal action was warranted.

ATTACHMENTS

Figure 1-3 Maps & Sketches
Attachment A - Photographs
B - Log Notes
C - Table of Witnesses
D - Site Safety Plan
E - Manifests
F - Polreps

FIGURE 1

General Site Location

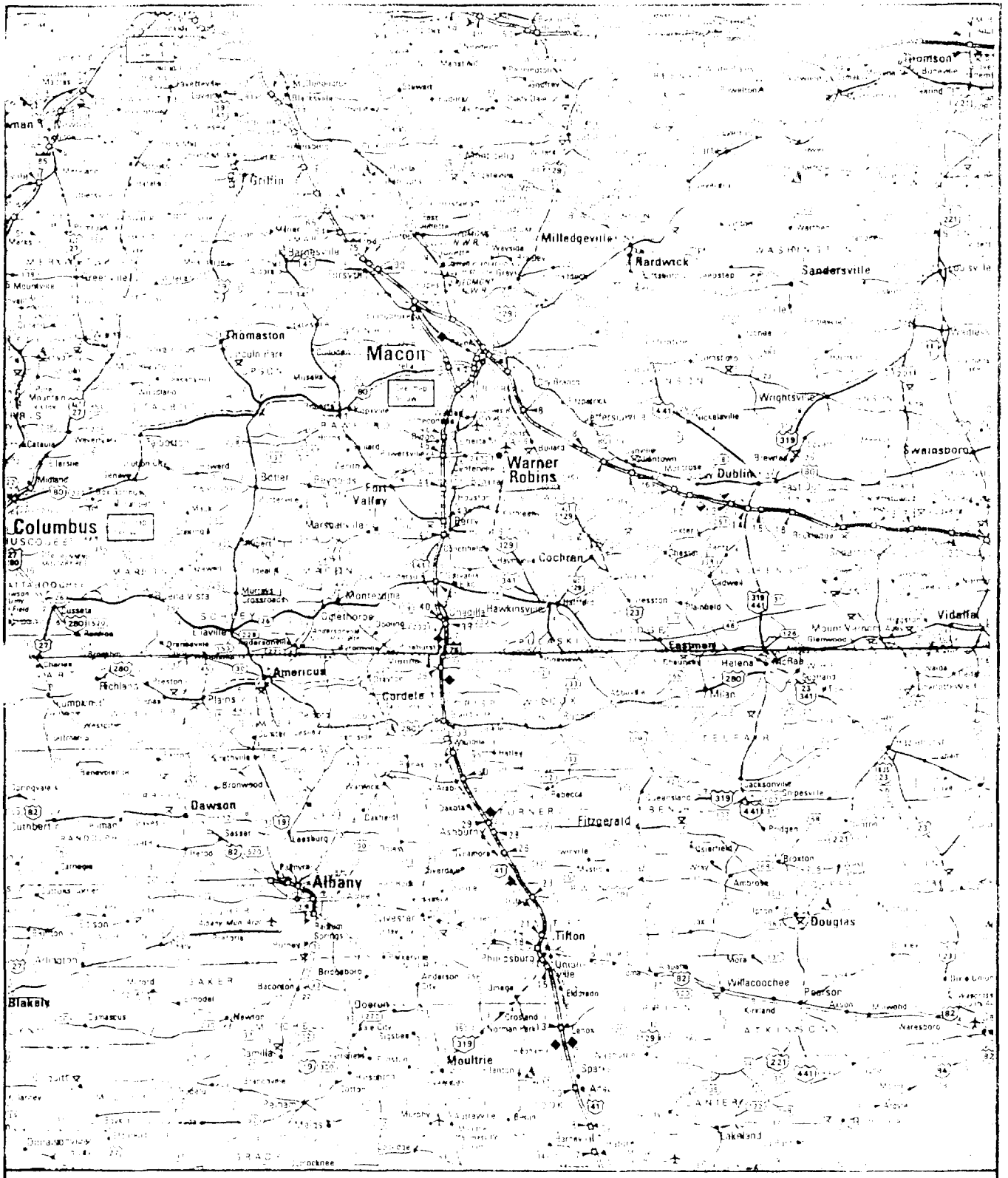


E.P.A. Region IV
General Site Location Map
TDD# 04-9006-10-3292
SITE NAME: Clark Bros. Warehose Pesticide Removal
LOCATION: Albany, Dougherty County, Georgia

EPA

FIGURE 2

Area Location Map



E.P.A. Region IV

Site Location Map

TDD # 04-[illegible]

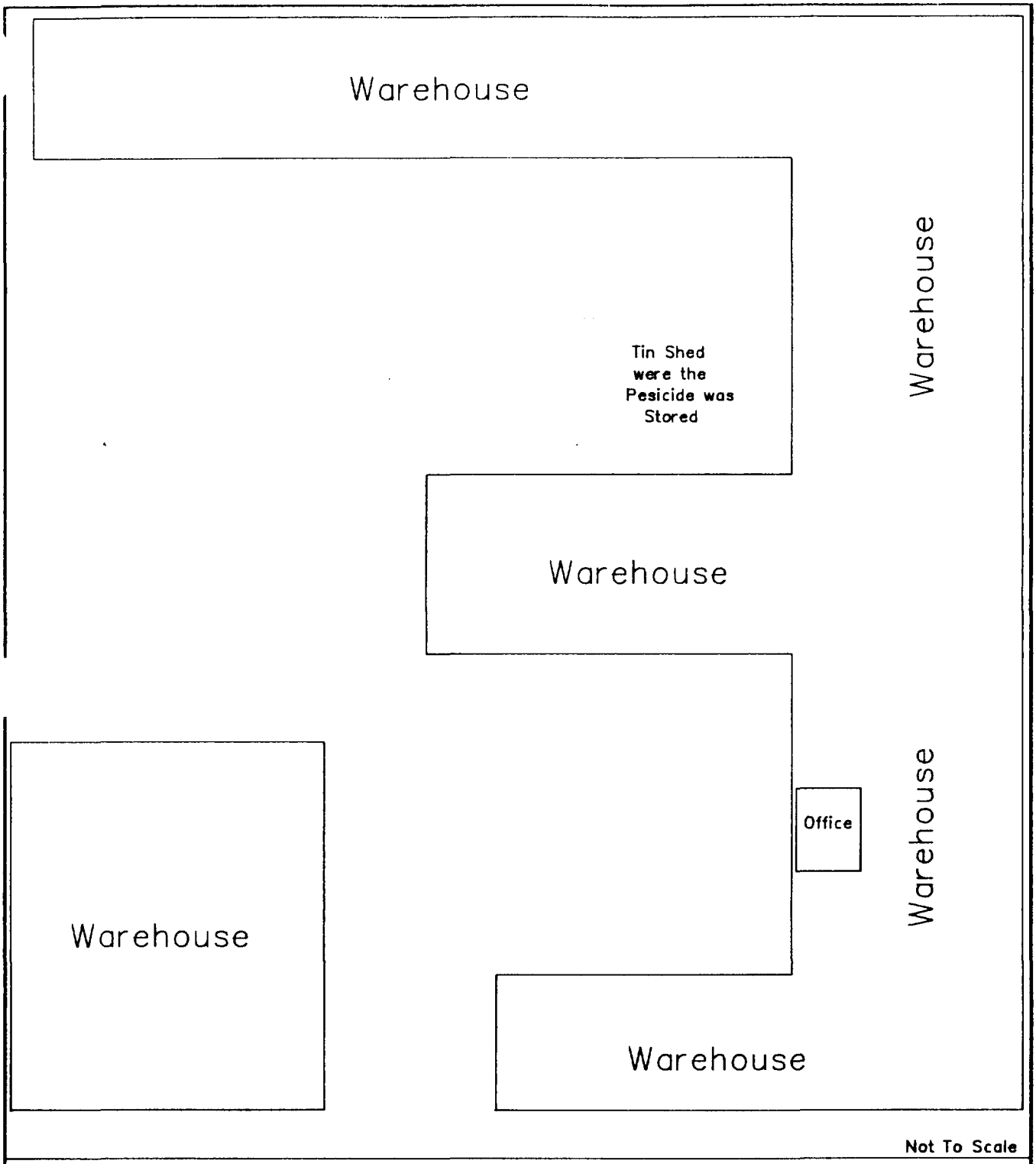
SITE NAME: Clark Bros. Warenose Pesticide Removal

LOCATION: Albany, Dougherty County, Georgia

EPA

FIGURE 3

Site Diagram

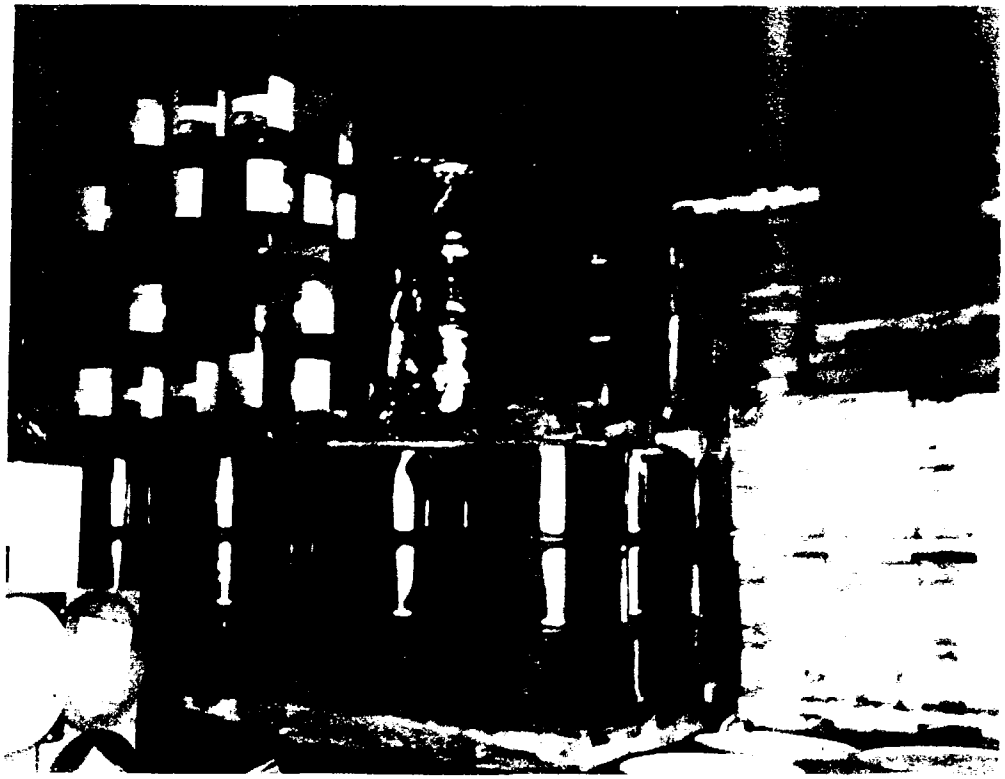


E.P.A. Region IV
Site Diagram
TDD# 04-9006-10-3292
SITE NAME: Clark Bros. Warehose Pesticide Removal
LOCATION: Albany, Dougherty County, Georgia

EPA

ATTACHMENT A

Photographs



2 4 6039

PHOTO #1
OFFICIAL PHOTOGRAPH
ENVIRONMENTAL PROTECTION AGENCY

Subject: Deteriorated 1 gallon can of Premium Grain Fumigant Number 2.
Location: Clark Bros. Warehouse
Albany, Dougherty County, GA
Photographer: Sunderland Date:03/29/90
Film:35mm ASA: 100 Time: 1100
TDD# 04-9006-10-3292 Witness: S. Dunbar
Location of Negatives: Atlanta TAT Office

PHOTO #2
OFFICIAL PHOTOGRAPH
ENVIRONMENTAL PROTECTION AGENCY

Subject: Numerous containers ranging from 55 gallon drums to 1 gallon cans.
Location: Clark Bros. Warehouse
Albany, Dougherty County, GA
Photographer: Sunderland Date:03/29/90
Film:35mm ASA: 100 Time: 1100
TDD# 04-9006-10-3292 Witness: S. Dunbar
Location of Negatives: Atlanta TAT Office

2 4 0100

PHOTO #3
OFFICIAL PHOTOGRAPH
ENVIRONMENTAL PROTECTION AGENCY

Subject: EPA personnel in "Level B"
bulking 1 gallon cans into
a 85 gallon recovery drum.
Location: Clark Bros. Warehouse
Albany, Dougherty County, GA
Photographer: S. Dunbar Date:07/31/90
Film:35mm ASA: 100 Time: 1100
TDD# 04-9006-10-3292 Witness: D. Rigger
Location of Negatives: Atlanta TAT Office

PHOTO #4
OFFICIAL PHOTOGRAPH
ENVIRONMENTAL PROTECTION AGENCY

Subject: Empty 1 gallon cans in good
to very poor condition.

Location: Clark Bros. Warehouse
Albany, Dougherty County, GA
Photographer: S. Dunbar Date:07/31/90
Film:35mm ASA: 100 Time: 1100
TDD# 04-9006-10-3292 Witness: D. Rigger
Location of Negatives: Atlanta TAT Office

PHOTO #5
OFFICIAL PHOTOGRAPH
ENVIRONMENTAL PROTECTION AGENCY

Subject: ERCS personnel in "Level B" opening and checking all of the 55 gallon drums to have only Premium Grain Fumigant No. 2 and pumping them into the tanker truck.

Location: Clark Bros. Warehouse
Albany, Dougherty County, GA
Photographer: S. Dunbar Date:07/31/90
Film:35mm **ASA:** 100 **Time:** 1100
TDD# 04-9006-10-3292 **Witness:** D. Rigger
Location of Negatives: Atlanta TAT Office

PHOTO #6
OFFICIAL PHOTOGRAPH
ENVIRONMENTAL PROTECTION AGENCY

Subject: Empty containers prior to crushing them for disposal.

Location: Clark Bros. Warehouse
Albany, Dougherty County, GA
Photographer: S. Dunbar Date:07/31/90
Film:35mm **ASA:** 100 **Time:** 1100
TDD# 04-9006-10-3292 **Witness:** D. Rigger
Location of Negatives: Atlanta TAT Office

2 4 0101

ATTACHMENT E

Manifest

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

2 4 0103

DO NOT WRITE IN THIS SPACE

ATT. DIS. REJ. PR.

1979 as amended and Act 136 PA 1969

Failure to file is punishable under section 299.548 MCL or Section 5 of Act 136 PA 1969

Please print or type

Form Approved OMB No 2050-0039 Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1 Generator's US EPA ID No: G A D 0 3 3 4 8 1 3 8 3 | Manifest Document No: 0 0 0 0 1

2 Page 1 of 1

Information in the shaded areas is not required by Federal law

3 Generator's Name and Mailing Address

(Clark Brothers Site)

U.S. EPA Region IV
345 Courtland Street
Atlanta, Georgia 30365

4 Generator's Phone (404) 347-3931

A. State Manifest Document Number: MI 1800109

B. State Generator's ID

5 Transporter 1 Company Name | 6 US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7 Transporter 2 Company Name | 8 US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9 Designated Facility Name and Site Address

Petro-Chem Processing Inc.
421 Lycaste
Detroit, MI 48214

10 US EPA ID Number: M I D 9 8 0 6 1 5 2 9 8

G. State Facility's ID

H. Facility's Phone: (313) 824-5840

GENERATOR

	11 US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)	12 Containers No	12 Containers Type	13 Total Quantity	14 Unit Wt/Vol	I. Waste No.	N/H
a	x Waste Flammable Liquid N.O.S., Flammable Liquid, UN1993, RQ (Carbon Tetrachloride)	001	T T	00055	G	D 0 0 1	
b							
c							
d							

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above: a/ / b/ / c/ / d/ /

15 Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Date Month Day Year

TRANSPORTER

17 Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

18 Transporter 2 Acknowledgement or Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20 Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name | Signature | Date Month Day Year

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

EPA Form 8700-22 (Rev 9/88)

PR 5110 Rev 9/88

BFI Waste Systems™
BROWNING-FERRIS INDUSTRIES

2 4 0104 No. 325503

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name USEPA Region 4 | Generating Location Clark Bros Site

Address 345 Courtland St | Address 15th Roosevelt Ave

Atlanta GA 30365 | Albany GA 31702

Phone No. 404-347-3931 | Phone No. 404-347-3931

BFI Waste Code GA 820 900716 65565

Description of Waste: RCRA Empty Drums

Quantity	Units	Containers No.	Containers Type
0020	Y	01	T

Type: D - Drum; C - Carton; B - Bag; T - Truck; P - Pounds; Y - Yards; O - Other

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: Donald Rieger (CH2MH) | Signature: [signature] | Shipment Date: 90

TRANSPORTER

Truck No. 51 | Phone No. 404-963-9501

Transporter Name Burton Environmental | Driver Name (Print) James Ritchie

Address P.O. Box 1403 Forest Pk. GA | Vehicle License No./State HK 1493

Vehicle Certification

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature: [signature] | Shipment Date: 080190

I hereby certify that the above named material was delivered without incident to the destination listed below.

Driver Signature | Delivery Date

DESTINATION

Site Name | Phone No.

Address

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Authorized Agent | Signature | Receipt Date

PASS CODE

GENERATOR RETAIN

ATTACHMENT B

Log Notes

30 July 1990

1130 TAT MEMBER SCOTT DUNBAR ARRIVED AT THE SITE AND MET MR. Dave Clark.

1200 6 Haztech personnel arrived at the sec Entry + Exit log for details of personnel.

1230 Haztech crew Breaks for lunch.

1330 Haztech crew returns from lunch and makes preparation to stage the drums

1350 OSC Rigger arrived at the site

1450 Haztech began staging the fifty five gallon drums and five gallon cans outside casing clark bros. fork lift.

TAT ~~Haztech~~ Haztech personnel dressed out in Level "B" PPE.

1515 Staging was complete, Haztech dressed down from level "B"

1545 Tat sample air in the staging area with a Carbon tetrachloride Dreager tube. 0 PPM was the response. Tat continued air surveilance at the cans and detect 1 ppm, Tat moved away from the drums.

1630 Haztech crew departed site for the day. Except for the PCT. He remained

1640 Tat and the OSC Departed the site for the day.

1730 ~~Haztech~~ HAZTECH ~~PCT~~ PCT SECURED for the day

31 July 90

0700 TAT and 6 Haytech personnel arrived at the site.

0730 OSC ARRIVED at the site.

0800 OSC, TAT, and Haytech hold safety Meeting Rm for haytech outlined PPE, Decon, and task operation. ~~The~~ following the safety meeting the crew makes preparation for todays operations

0830 Haytech and Tat dress out in level "B" PPE. Haytech began opening and BULKing the one gallon cans. in an overpack drum, and ~~the~~ opening and observing the 55 gallon drums. Tat conducted air monitoring with the cgi and HNU in both work areas. inside work area detection were: cgi 0% lel and 20.0% O_2 the HNU detected elevated reading to 350 units above the drum that were being used to bulk the cans. level at 10' feet the drums were significantly lower at 2-15 units. The outside work area was in and around the stage drum. Readings outside were, cgi 0% lel and 20.5% O_2 the Hnu detected readings from 1-20 units ~~in~~ slightly above the opening. air monitoring readings were varied due to wind direction and speed.

0900 Weather: Hot 95+°F, Humid with clear skis and Varing wind. Haytech personnel are taking frequent breaks.

1100 TAT AND Haytech pet print 190055 for the previous days activities. OSC Rigger to review final.

1145 Haytech crew continues operations

2 4 0108

31 July 90

1300 Haytech crew complete operation and breaks for lunch while awaiting for the tank truck to arrive.

1400 one 5K gallon Northern INC tank truck arrives at the site and Haytech crew begins to prepare to load the tanker. OSC Rigger Removed yesterdays 1900-55 and the daily cost summary was printed.

1430 Tat and Haytech crew dressed out in level "B" PPE. and ~~B~~ begins load the tank truck. Haytech continues to open 1 gallon cans and ~~Ca~~ Bulk them into an 85 gallon overpack. Tat conducted air monitoring with HNU and Carbon tetrachloride drager tubes. the HNU detected 1-5 Units at the ~~Pe~~ perimeter and the drager tubes detected 1-2 ppm. in the work zone area the ~~Wa~~ HNU detected 15-300 units in Various locations and were dependent on wind and distance from the open containers

1930 operation continue at a slow but even pase to allow presonnell in level "B" to change out and take frequent breat air monitoring at the perimeter remain consistant to the Varying wind speed and direction.

1945 pumping operation are secured and haytech begins disconnecting the system

2000 the site secures for the day, Haytech, Epa and Tat departs for the night the Northern tanker departs Enroute Petro chem processing INC, Detroit, Mi the Tanker is carring 3700 gallons of Product

1 August 90

0700 Tat and Haytech arrive at the site. and awaits OSC Rigger to open up the main Entrance.

0730 OSC Rigger open site and Haytech begins to decon house and prepares to crush empty drums and containers. Tat conducts perimeter air monitoring the HNU detected 1-9 units above Background from the perimeter

0900 Haytech personnel continue to crush drums, an cans in level "B" PPE.

1100 Tat and PCT generate the 1900-55 for the previous day.

1200 Crew breaks for lunch while waiting for Roll off to arrive on site.

1300 the crew Returns from lunch and OSC Rigger approves the 1900-55 and a D&S is printed.

1400 OSC Rigger departs the site Enroute Atlanta

1500 Barton Environmental Roll off truck arrives on site. the truck ~~#~~ Number is #51 with a 20 cu yrd Roll off Box

1545 Barton Environmental truck departs the site with a full load of crushed cans and drums and is enroute BFI land fill in Fayetteville Ga. Haytech crew is securing the area.

1700 The site ~~is~~ is secured and thirteen drums 13 are left at the site for future disposa Haytech will remain in albany tonight Tat departs Enroute Atlanta

ATTACHMENT C

Table of Witnesses

TABLE OF WITNESS

Scott W. Dunbar
Assistant Regional Safety Officer
Roy F. Weston, Incorporated
1575 Northside Drive
Building 100, Suite 120
Atlanta, GA 30318
(404) 352-4147

R. Donald Rigger
On Scene Coordinator
U.S. Environmental Protection Agency
315 Courtland Street N.E.
Atlanta, GA 30365
(404) 347-3931

Sam Cook
Project Supervisor
Haztech, Inc.
5280 Panola Industrial Blvd.
Decatur, GA 30035-4013
(404) 981-9332

Eugene Clark
Owner Clark Brothers Warehouse
P.O. Box 975
Albany, GA 31702
(912) 435-7177

ATTACHMENT D

Site Safety Plan

WESTON SPER DIVISION
HAZARDOUS WASTE SITE INVESTIGATION AND EMERGENCY RESPONSE
HEALTH AND SAFETY PLAN

U.S. EPA CONTACT: R. Don Rigger, OSC
Date of Inspection: 29 March 1990 Time: 1210 TDD No. 04-9006-10
Original Safety Plan: Yes ___ No ✓ PCS No. 3292
Admendment/Modification No. ___

SITE SAFETY COORDINATOR: Scott W. Dunbar

Site Name: Albany Public Pesticide Warehouse (Clark Brothers)

Site Address: Street No. P.O. Box 975
City Albany
County Dougherty
State Georgia Zip Code 31702

Site Contact: Chet Clark / Gene Clark Phone (912) 435-7717

Directions to Site: (Attach Map) I-75 South to Hwy 300 South to Albany. To Hwy 19 North

SITE HISTORY: Public pesticide warehouse containing several drums of banned pesticide (No 2 grain fumigant) comprised of carbon tetrachloride (82.3%), Carbon disulfide (16.3), Carbon Dioxide (1.0%), and Pentane (.4%).

INCIDENT DESCRIPTION

TYPE: A) Spill ✓ Air Release ✓ Fire ___ HW Site ✓ Other ___
B) Assessment ___ Sampling ___ Emergency Response ___
Clean-up/Removal ✓ Other (specify) ___
C) Urban/Residential ___ Commercial ___ Industrial ___
Rural ✓ Remote ___

PERSONNEL PHYSICAL SAFETY HAZARDS:

Heat ✓ Cold ___ Noise ___ Underground Utilities ___
Overhead Utilities ___ Heavy Equipment ✓ Slip, Trip, Fall ✓
Confined Spaces ✓ Pressurized Airlines ___ Explosive ___
Ladders ___ Scaffolds ___ Unguarded Openings-Wall, Floor ___
Liquids in Open Containers, Ponds/Lagoons ✓
Other Bulking MANUFACTURER'S SEALED CONTAINERS

CHEMICAL CONTAMINANTS OF CONCERN

CONTAMINANT	TLV PEL IDLH	PHYSICAL CHARACTERISTICS	ROUTE OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE	FIRST AID	INSTRUMENTS TO DETECT
CARBON TETRACHLORIDE 83.3 % SEE HSDB	5 ppm 31 mg/m3 Carcinogen	COLORLESS LIQUID WITH AN ETHER-LIKE ODOR	EYES AND SKIN, INHALATION, INGESTION	DIZZINESS, INCOORDINATION, ANESTHESIA, MAY BE ACCOMPANIED BY NAUSEA AND LIVER DAMAGE.	EYES+SKIN: FLUSH WITH WATER, GET MEDICAL ATTENTION INHALATION: REMOVE TO FRESH AIR & KEEP PATIENT WARM & QUIET INGESTION: INDUCE VOMITING AND GET MEDICAL ATTENTION.	HNU - 11.7
CARBON DISULFIDE 16.3 % SEE HSDB	10 ppm 200 ppm for 10 min. 100 ppm for 30 min. 50 ppm for 60 min. 500 ppm (IDLH)	COLORLESS TO FAINTLY YELLOW LIQUID WITH A STRONG, DISAGREEABLE OR SWEETISH ODOR Odor Threshold .1-.2 ppm SPECIAL HAZARDS: EXTREMELY FLAMMABLE WITH IGNITION TEMPERATURE OF 212° F. TOXIC GASES PRODUCED FROM COMBUSTION OF PRODUCT. USE DRY CHEMICAL, CARBON DIOXIDE TO EXTINGUISH FIRE.	INHALATION SKIN CONTACT INGESTION	MILD TO MODERATE IRRITATION OF SKIN, EYES, AND MUCOUS MEMBRANES FROM LIQUID OR CONCENTRATED VAPOR. HEADACHE, GARLICKY BREATH, NAUSEA, VOMITING, DIARRHEA, AND OCCASIONALLY ABDOMINAL PAIN; WEAK PULSE, PALPITATIONS, FATIGUE, WEAKNESS IN THE LEGS, UNSTEADY GAIT, VERTIGO, MANIA, HALLUCINATIONS OF SIGHT, HEARING, TASTE, AND SMELL IN ACUTE, MASSIVE VAPOR EXPOSURES.	INHALATION: REMOVE VICTIM FROM CONTAMINATED AREA, ADMINISTER OXYGEN AND ARTIFICIAL RESPIRATION IF NEEDED. SKIN CONTACT: WASH AREAS WITH COPIOUS AMOUNTS OF WATER. INGESTION: INDUCE VOMITING AND FOLLOW WITH GASTRIC LAVAGE AND SALINE CATHARTICS.	HNU - 11.7

Description of Decontamination To Be Used: IF SKIN CONTACT IS MADE, AFFECTED AREAS WILL BE WASHED/SCRUBBED WITH SOAP AND WATER AND VICTIM TAKEN TO NEAREST AVAILABLE MEDICAL HELP. IF INHALATION/INGESTION OCCURS VICTIM WILL BE IMMEDIATELY TAKEN TO AVAILABLE MEDICAL FACILITY FOR TREATMENT.

CHEMICAL CONTAMINANTS OF CONCERN

CONTAMINANT	TLV PEL IDLH	PHYSICAL CHARACTERISTICS	ROUTE OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE	FIRST AID	INSTRUMENTS TO DETECT
SULFUR DIOXIDE 1.0% SEE HSOB	2. PPM 5.2 mg/m³ 100PPM (IDLH)	COLORLESS, ODORLESS GAS; CAN BE LIQUID OR SOLID. STRONG SUFFOCATING ODOR.	SKIN CONTACT INHALATION	INHALATION: INCREASED RESPIRATION RATE, HEADACHE, SUBTLE PHYSIOLOGICAL CHANGES UP TO 5% CONCENTRATION AND PROLONGED EXPOSURE. SOLID CAN CAUSE COLD CONTACT BURNS. LIQUID OR COLD GAS CAN CAUSE FREEZING INJURY TO SKIN OR EYES.	INHALATION; MOVE VICTIM TO FRESH AIR. SKIN: TREAT BURNS FROM CONTACT WITH SOLID IN SAME WAY AS FROSTBITE.	
PENTANE .4%	600 ppm (TLV) 15,000 ppm (IDLH)	COLORLESS LIQUID WITH A GASOLINE-LIKE ODOR	INHALATION INGESTION	LOW TOXICITY. VERY HIGH VAPOR CONCENTRATIONS PRODUCE NARCOSIS. ASPIRATION INTO LUNGS CAN PRODUCE CHEMICAL PNEUMONITIS AND/OR PULMONARY EDEMA	INHALATION: REMOVE VICTIM FROM EXPOSURE SUPPORT RESPIRATION IF NEEDED. INGESTION: DO NOT INDUCE VOMITING; CALL PHYSICIAN	

Description of Decontamination To Be Used: _____

CBT

CARBON TETRACHLORIDE

2 4 0116

Common Synonyms
Carbon Tet
Tetrachloromethane

Watery liquid | Colorless | Sweet odor

Stable in water. Poisonous vapor is produced.

Avoid contact with liquid and vapor. Keep people away.
Wear goggles and self-contained breathing apparatus.
Stop discharge if possible.
Stay upwind and use water spray to "knock down" vapor.
Notify local health and pollution control agencies.

Fire

Not flammable.
POISONOUS AND IRRITATING GASES ARE PRODUCED WHEN HEATED.
Wear goggles and self-contained breathing apparatus.

Exposure

CALL FOR MEDICAL AID.

VAPOR
POISONOUS IF INHALED.
Irritating to eyes.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
POISONOUS IF SWALLOWED.
Irritating to skin and eyes.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR RAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and pollution control officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 445-6)

Isolate hazard area — person
Restrict access
Should be removed

2. LABELS

No hazard label required by Code of Federal Regulations

3. CHEMICAL DESIGNATIONS

3.1 Synonyms
Benzinoform
Necatorina
Perchloromethane
Tetrachloromethane

3.2 Coast Guard Compatibility Classification: Halogenated hydrocarbon

3.3 Chemical Formula: CCl_4

3.4 IMCO/United Nations Numerical Designation: 6.1/1846

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid

4.2 Color: Colorless

4.3 Odor: Sweetish, aromatic; moderately strong ethereal; somewhat resembling that of chloroform.

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Organic vapor canister with full face mask; protective clothing; rubber gloves

5.2 Symptoms Following Exposure: Dizziness, incoordination, anesthesia; may be accompanied by nausea and liver damage. Kidney damage also occurs, often producing decrease or stopping of urinary output.

5.3 Treatment for Exposure: EYES AND SKIN: flush with plenty of water; for eyes, get medical attention. Remove contaminated clothing and wash before reuse. INHALATION: immediately remove to fresh air. Keep patient warm and quiet and get medical attention promptly. Start artificial respiration if breathing stops. INGESTION: induce vomiting and get medical attention promptly. No specific antidote known.

5.4 Toxicity by Inhalation (Threshold Limit Value): 10 ppm

5.5 Short-Term Inhalation Limits: 25 ppm for 30 min.

5.6 Toxicity by Ingestion: Grade 2; LD_{50} 0.5 to 5 g/kg (rat)

5.7 Late Toxicity: Causes severe liver damage and death if ingested.

5.8 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.

5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.

5.10 Odor Threshold: Greater than 10 ppm

6. FIRE HAZARDS

6.1 Flash Point: Not flammable

6.2 Flammable Limits in Air: Not flammable

6.3 Fire Extinguishing Agents: Not pertinent

6.4 Fire Extinguishing Agents Not to be Used: Not pertinent

6.5 Special Hazards of Combustion Products: Forms poisonous phosgene gas when exposed to open flames.

6.6 Behavior in Fire: Decomposes to form chlorine and phosgene

6.7 Ignition Temperature: Not flammable

6.8 Electrical Hazard: Not pertinent

6.9 Burning Rate: Not flammable

7. CHEMICAL REACTIVITY

7.1 Reactivity with Water: No reaction

7.2 Reactivity with Common Materials: No reaction

7.3 Stability During Transport: Stable

7.4 Neutralizing Agents for Acids and Caustics: Not pertinent

7.5 Polymerization: Not pertinent

7.6 Inhibitor of Polymerization: Not pertinent

8. WATER POLLUTION

8.1 Aquatic Toxicity: Data not available

8.2 Waterfowl Toxicity: Data not available

8.3 Biological Oxygen Demand (BOD): None

8.4 Food Chain Concentration Potential: None

9. SELECTED MANUFACTURERS

1. Dow Chemical Co.
Midland, Michigan 48640
2. FMC Corp.
Inorganic Chemicals Div.
633 Third Ave.
New York, N. Y. 10017
3. Stauffer Chemical Co.
Industrial Chemicals Div.
La Meyne, Alabama 36505

10. SHIPPING INFORMATION

10.1 Grades of Purity: Commercial; technical; USP

10.2 Storage Temperature: Ambient

10.3 Inert Atmosphere: No requirement

10.4 Venting: Pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 445-3)

A-X

12. HAZARD CLASSIFICATIONS

12.1 Code of Federal Regulations: ORM-A

12.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	0
Health	
Vapor Irritant	2
Liquid or Solid Irritant	1
Poison	4
Water Pollution	
Human Toxicity	2
Aquatic Toxicity	2
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self-Reaction	0

12.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	3
Flammability (Red)	0
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 Physical State at 18°C and 1 atm: Liquid

13.2 Molecular Weight: 153.83

13.3 Boiling Point at 1 atm: 170°F = 76.5°C = 349.7°K

13.4 Freezing Point: −9.4°F = −23.0°C = 250.2°K

13.5 Critical Temperature: 541°F = 283°C = 556°K

13.6 Critical Pressure: 660 psia = 45 atm = 4.6 MN/m²

13.7 Specific Gravity: 1.59 at 20°C (liquid)

13.8 Liquid Surface Tension: 27.0 dynes/cm = 0.027 N/m at 20°C

13.9 Liquid-Water Interfacial Tension: 45.0 dynes/cm = 0.045 N/m at 20°C

13.10 Vapor (Gas) Specific Gravity: 5.3

13.11 Ratio of Specific Heats of Vapor (Gas): 1.111

13.12 Latent Heat of Vaporization: 84.2 Btu/lb = 46.8 cal/g = 1.959 × 10⁵ J/kg

13.13 Heat of Combustion: Not pertinent

13.14 Heat of Decomposition: Not pertinent

13.15 Heat of Solution: Not pertinent

13.16 Heat of Polymerization: Not pertinent

(Continued on pages 5 and 6)

NOTES

REVISED 1978

CARBON DISULFIDE 2 4 0117

CBE

Common Synonyms	Watery liquid	Colorless to yellow	Rotten egg to sweet odor
Carbon sulfide	Sinks in water. Flammable, irritating vapor is produced.		

Avoid contact with liquid and vapor. Keep people away.
Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves).
Shut off ignition sources and call fire department.
Stop discharge if possible.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Extinguish with dry chemical or carbon dioxide.
Water and foam may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause nausea, vomiting, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Will burn skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk, and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Issue warning-high flammability
Restrict access
Evacuate area

2. LABEL

2.1 Category: Flammable liquid
2.2 Class: 3

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Carbon disulfide
3.2 Formula: CS_2
3.3 IMO/UN Designation: 3.1/1131
3.4 DOT ID No.: 1131
3.5 CAS Registry No.: 75-15-0

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless
4.3 Odor: Faint sweetish; disagreeable; otherwise, like that of decaying cabbage

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Only self-contained breathing mask with full face, approved by the United States Bureau of Mines, is recommended. If the vapor concentration exceeds 2% by volume or is unknown, supplied-air respiratory equipment of appropriate design with full face masks should be used by all persons entering contaminated area. Masks should be used only for emergency situations and should be located accordingly. Almost any type of industrial clothing is satisfactory. Splashes of small quantity are not harmful to fabrics, and evaporation from clothing is quite rapid. Clothing should, however, be removed and the skin washed with water. Goggles should be used when there is any danger of CS_2 splashes or spray.

5.2 Symptoms Following Exposure: ACUTE EXPOSURE: mild to moderate irritation of skin, eyes, and mucous membranes from liquid or concentrated vapors; headache, garlicky breath, nausea, vomiting, diarrhea (even after vapor exposures), and occasionally abdominal pain; weak pulse, palpitations; fatigue, weakness in the legs, unsteady gait, vertigo; mania, hallucinations of sight, hearing, taste, and smell in severe, massive vapor exposures; central nervous depression with respiratory paralysis; death may occur during coma or after a convulsion.

5.3 Treatment of Exposure: INHALATION: remove victim promptly from contaminated area. Administer oxygen and artificial respiration if needed. SKIN CONTACT: wash affected areas with copious quantities of water. INGESTION: induce vomiting and lavage with gastric lavage and saline cathartics.

5.4 Threshold Limit Value: 10 ppm

5.5 Short Term Inhalation Limits: 200 ppm for 10 minutes, 100 ppm for 30 minutes and 50 ppm for 60 minutes.

5.6 Toxicity by Ingestion: Grade 2; rat LD_{50} = 0.1 - 0.99 g/kg

5.7 Late Toxicity: Non-specific liver cell damage in rats; higher incidence of upper respiratory disease in humans.

5.8 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.

(Continued)

6. FIRE HAZARDS

6.1 Flash Point: −22°F C.C.
6.2 Flammable Limits in Air: 1.3%-50%
6.3 Fire Extinguishing Agents: Dry chemical, carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water and foam may be ineffective on fire.
6.5 Special Hazards of Combustion Products: Toxic gases are generated; wear self- contained breathing apparatus.
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 212°F
6.8 Electrical Hazard: Contact of the liquid or vapor with the surface of a lighted electric light bulb could result in ignition.
6.9 Burning Rate: 2.7 mm/min.
6.10 Adiabatic Flame Temperature: Data not available

(Continued)

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 38

8. WATER POLLUTION

8.1 Aquatic Toxicity: 35 ppm/48 hr/mosquito fish/TL_m/fresh water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Commercial; technical; USP
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: Inerted
9.4 Venting: Pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-X-Y

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Flammable liquid
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	4
Health	
Vapor irritant	2
Liquid or Solid irritant	2
Poisons	3
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	2
Aesthetic Effect	3
Reactivity	
Other Chemicals	2
Water	0
Self Reaction	0

11.3 NFPA Hazard Classifications:

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 16°C and 1 atm: Liquid
12.2 Molecular Weight: 76.14
12.3 Boiling Point at 1 atm: 115°F = 46.3°C = 319.5°K
12.4 Freezing Point: −168.8°F = −111.6°C = 161.6°K
12.5 Critical Temperature: 523°F = 273°C = 546°K
12.6 Critical Pressure: 1100 psia = 76 atm = 7.7 MN/m²
12.7 Specific Gravity: 1.26 at 68°C (liquid)
12.8 Liquid Surface Tension: 32 dynes/cm = .032 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 48.4 dynes/cm = .0484 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: 2.6
12.11 Ratio of Specific Heats of Vapor (Gas): 1.202
12.12 Latent Heat of Vaporization: 153 Btu/lb = 86 cal/g = 3.569 X 10^4 J/kg
12.13 Heat of Combustion: −8514 Btu/lb = −3230 cal/g = −135.2 X 10^4 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: 13.80 cal/g
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: 10.3 psia

5. HEALTH HAZARDS (Continued)

5.9 Liquid or Solid Irritant Characteristics: Causes smarting of the skin and first-degree burns on short exposure and may cause secondary burns on long exposure.
5.10 Odor Threshold: 0.21 ppm
5.11 IDLH Value: 500 ppm

6. FIRE HAZARDS (Continued)

6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

CDO

CARBON DIOXIDE

24 0118

Common Synonyms
Carbonic acid gas
Carbonic anhydride

Liquefied compressed gas or solid — Colorless gas or white solid — Odorless

Solid sinks and boils in water. Visible vapor cloud is produced.

AVOID CONTACT WITH LIQUID AND SOLID. KEEP PEOPLE AWAY.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Stop discharge if possible.

Fire

Not flammable.
Containers may explode in fire.
Cool exposed containers with water.

Exposure

Call for medical aid.

VAPOR
If inhaled will cause dizziness or difficult breathing.
Move victim to fresh air.
If breathing is difficult, give oxygen.

LIQUID OR SOLID
Will cause frostbite.
Flush affected areas with plenty of water.
DO NOT RUB AFFECTED AREAS.

Water Pollution

Not harmful to aquatic life.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, 08 445-R)

Restrict access.
Disperse and flush.

2. LABEL

3. CHEMICAL DESIGNATIONS

3.1 Synonyms: Carbonic acid gas; Carbonic anhydride
3.2 Coast Guard Compatibility Classification: Not applicable
3.3 Chemical Formula: CO_2
3.4 IMCO/United Nations Numerical Designations: 2/1013

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquefied compressed gas or solid ("Dry Ice")
4.2 Color: Colorless
4.3 Odor: None

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Self-contained breathing apparatus in excessively high CO_2 concentration areas. For handling liquid or solid, wear safety goggles or face shield, insulated gloves, long-sleeved shirt, and trousers worn outside boots or over high-top shoes to shed spilled liquid.

5.2 Symptoms Following Exposure: Inhalation causes increased respiration rate, headache, subtle physiological changes for up to 5% concentrations and prolonged exposure. Higher concentrations can cause unconsciousness and death. Solid can cause cold contact burns. Liquid or cold gas can cause freezing injury to skin or eyes similar to a burn.

5.3 Treatment for Exposure: INHALATION: move victim to fresh air. SKIN: treat burns from contact with solid in same way as frostbite.

5.4 Toxicity by Inhalation (Threshold Limit Value): 5000 ppm

5.5 Short-Term Inhalation Limits: 30,000 ppm for 60 min.

5.6 Toxicity by Ingestion: Not pertinent (gas with low boiling point)

5.7 Late Toxicity: None

5.8 Vapor (Gas) Irritant Characteristics: Data not available

5.9 Liquid or Solid Irritant Characteristics: Data not available

5.10 Odor Threshold: Not pertinent

6. FIRE HAZARDS

6.1 Flash Point: Not flammable
6.2 Flammable Limits in Air: Not flammable
6.3 Fire Extinguishing Agents: Not pertinent
6.4 Fire Extinguishing Agents Not to be Used: Not pertinent
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Containers may explode when heated.
6.7 Ignition Temperature: Not pertinent
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: Not pertinent

7. CHEMICAL REACTIVITY

7.1 Reactivity with Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent

8. WATER POLLUTION

8.1 Aquatic Toxicity: 100-200 mg/l/*/various organisms/LC/fresh water
*Time period not specified
8.2 Waterfowl Toxicity: Inhalation 5-8%, no effect
8.3 Biological Oxygen Demand (BOD): None
8.4 Food Chain Concentration Potential: None

9. SELECTED MANUFACTURERS

1. Chemetron Corporation
Cardox Products Division
111 E. Wacker Drive
Chicago, Ill. 60601
2. Union Carbide Corporation
Linde Division
Morristown, N. J. 08057
3. Liquid Carbonic Corporation
135 S. LaSalle St.
Chicago, Ill. 60603

10. SHIPPING INFORMATION

10.1 Grades of Purity: Research: 99.995+%; Instrument: 99.99+%; Bone Dry: 99.95+%; Commercial: 99.5+%
10.2 Storage Temperature: Ambient
10.3 Inert Atmosphere: No requirement
10.4 Venting: Liquid—safety relief; solid—open

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, 08 445-R)

A-C-11

12. HAZARD CLASSIFICATIONS

12.1 Code of Federal Regulations: Nonflammable compressed gas
12.2 MAS Hazard Rating for Bulk Water Transportation: Not listed
12.3 NFPA Hazard Classification: Not listed

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 Physical State at 15°C and 1 atm: Gas
13.2 Molecular Weight: 44.0
13.3 Boiling Point at 1 atm: Not pertinent (sublimes)
13.4 Freezing Point: −109.3°F = −78.5°C = 194.7°K
13.5 Critical Temperature: 88°F = 31°C = 304°K
13.6 Critical Pressure: 1,070 psia = 72.9 atm = 7.40 MN/m²
13.7 Specific Gravity: 1.56 at −79°C (solid)
13.8 Liquid Surface Tension: Not pertinent
13.9 Liquid-Water Interfacial Tension: Not pertinent
13.10 Vapor (Gas) Specific Gravity: 1.53
13.11 Ratio of Specific Heats of Vapor (Gas): 1.0474
13.12 Latent Heat of Vaporization: 150 Btu/lb = 83 cal/g = 3.5 × 10⁵ J/kg
13.13 Heat of Combustion: Not pertinent
13.14 Heat of Decomposition: Not pertinent
13.15 Heat of Solution: Not pertinent
13.16 Heat of Polymerization: Not pertinent

(Continued on pages 3 and 6)

NOTES

PENTANE

2 4 0119 | PTA

Common Synonyms	Liquid	Colorless	Gasoline odor
	Floats on water. Flammable vapor is produced. Boiling point is 97°F.		

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Avoid contact with liquid and vapor.
Isolate area and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Containers may explode when heated.
Vapor may explode if ignited in an enclosed area.
Extinguish with foam, dry chemicals or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
If inhaled, will cause dizziness or difficult breathing.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Harmful if swallowed.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Issue warning-high flammability
Restrict access
Evacuate area

2. LABEL

2.1 Category: Flammable liquid
2.2 Class: 3

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Paraffin
3.2 Formula: n-C_5H_{12}
3.3 IMO/UN Designation: 3.1/1265
3.4 DOT ID No.: 1265
3.5 CAS Registry No.: 109-66-0

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless
4.3 Odor: Like gasoline

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Goggles or face shield (as for gasoline).
5.2 Symptoms Following Exposure: Low toxicity. Very high vapor concentrations produce narcosis. Aspiration into lungs can produce chemical pneumonitis and/or pulmonary edema.
5.3 Treatment of Exposure: INHALATION: remove from exposure; support respiration if needed. INGESTION: do NOT induce vomiting; call physician.
5.4 Threshold Limit Value: 600 ppm
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Data not available
5.7 Late Toxicity: None
5.8 Vapor (Gas) Irritant Characteristics: Vapors are nonirritating to the eyes and throat.
5.9 Liquid or Solid Irritant Characteristics: No appreciable hazard. Practically harmless to the skin.
5.10 Odor Threshold: 10 ppm
5.11 IDLH Value: 5,000 ppm

6. FIRE HAZARDS

6.1 Flash Point: −57°F C.C.
6.2 Flammable Limits in Air: 1.4-8.3% (by vol.)
6.3 Fire Extinguishing Agents: Foam, dry chemical, carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective.
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Containers may explode
6.7 Ignition Temperature: 544°F
6.8 Electrical Hazard: Class I, Group D
6.9 Burning Rate: 5.6 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 31

8. WATER POLLUTION

8.1 Aquatic Toxicity: >60 ppm/*/roach/fathead/fresh water
*Time period not specified
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Pure (99.2%); technical; research (99.99%)
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester) or pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)
A-T-U-V-W

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Flammable liquid
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	4
Health	
Vapor Irritant	0
Liquid or Solid Irritant	0
Poisons	1
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	2
Aesthetic Effect	1
Reactivity	
Other Chemicals	0
Water	0
Self Reaction	0

11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	4
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: 72.15
12.3 Boiling Point at 1 atm: 97.0°F = 36.1°C = 309.3°K
12.4 Freezing Point: −201.0°F = 129.4°C = 143.8°K
12.5 Critical Temperature: 386.7°F = 196.5°C = 469.7°K
12.6 Critical Pressure: 480 psia = 33.3 atm = 3.37 MN/m²
12.7 Specific Gravity: 0.630 at 20°C (liquid)
12.8 Liquid Surface Tension: 16 dynes/cm = 0.016 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 50.2 dynes/cm = 0.0502 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: 2.5
12.11 Ratio of Specific Heats of Vapor (Gas): 1.075
12.12 Latent Heat of Vaporization: 153.7 Btu/lb = 85.38 cal/g = 3.575 X 10^5 J/kg
12.13 Heat of Combustion: −19,362 Btu/lb = −10,751 cal/g = −450.12 X 10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: 27.89 cal/g
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: 15.5 psia

NOTES

SPECIFY PPE TYPE

TASK TO BE PERFORMED	ANTIC. LEVEL OF PROTECT.	COVERALL	GLOVE IN/OUT.	AIR PURIF. RESPIRATOR CART/CANN
ERCS MONITORING	B		PVC/LATEX	SCBA
AIR MONITORING		SAFETY SHOE	HARD HAT	SPLASH SHIELD
DOCUMENTATION				

Anticipated Monitoring

Radiation Meter [✓] CGI [✓] HNU [✓] 11.7 eV Probe OVA [~~✓~~]

Detector Tube [✓] CARBON TET Other SULPHUR DIOXIDE

EMERGENCY PHONE NUMBERS:	LOCATION	PHONE	NOTIFIED
FIRE	Albany, Ga	(912) 431-3262	N
POLICE	Albany, Ga	(912) 431-3290	N
AMBULANCE	Albany, Ga	(912) 883-1800	N
HOSPITAL	Albany, Ga	(912) 883-1800	Y

CHEMICAL TRAUMA CAPABILITY? Y

DIRECTIONS TO HOSPITAL: (ATTACH MAP) RTE. VERIFIED BY____ DATE_____

C.B. Putney Memorial Hospital. Exit site left on Roosevelt To Slappey Rd. To 19(5) Take Jefferson exit off of 195. and follow hospital signs. Hospital ½ mile from exit.

ADDITIONAL EMERGENCY PHONE CONTACTS:

CHEMTREC	(800) 424-9300
TSCA HOTLINE	(800) 424-9065, (202) 544-1404
ATSDR	(DAY) (404) 329-2888
	(NIGHT) (404) 566-7777
AT & F (EXPLOSIVES INFO.)	(800) 424-9555
NATIONAL RESPONSE CENTER	(800) 424-8802
WESTON MEDICAL EMERGENCY SERVICE	(513) 421-3063
WESTON 24 HOUR HOTLINE	(215) 524-1925, 1926
PESTICIDE INFORMATION SERVICE	(800) 845-7633
EPA ERT EMERGENCY	(201) 321-6660
RCRA HOTLINE	(800) 424-9346
CMA CHEMICAL REFERRAL CENTER	(800) 262-8200
NATIONAL POISON CONTROL CENTER	(800) 942-5969
U.S. DOT	(202) 366-0656 (Day only)

Prepared by: Thomas J. Sunderland Date: 3/28/90

Pre-Response Approval by: Carley B Pitt Date: 3/28/90

TDD# 04-9003-41 PCS# 3151

OBSERVED CONDITIONS/ACTIVITIES

Describe Initial Conditions (Source/Type/Quantity): Fumigant being stored in warehouse (55 gal drums, 5 gal drums, 1 gal cans). Containers are corroding badly. Fumigant appears to be leaking slowly and volatilizing rapidly. Total quantity leaked unknown. No visible liquid pooling on the floor.

DOCUMENTATION PERFORMED BY: T. Sunderland

Type: Photo ✓ Log Book ✓ Recorder _____ Video _____

PHYSICAL DESCRIPTION

Size of Site: warehouse Topography Terrain: flat Weather overcast 75°

Distance to Nearest: Residence _____ School _____ Hospital _____

Public Building _____ Other Warehouse

Evacuation: Yes ___ No ✓ Number ___ By Whom _____

Nearest Waterway: _____ Distance: _____

Condition	Observed	Potential	None
Surface Water Contamination			✓
Ground Water Contamination			✓
Drinking Water Contamination			✓
Air Contamination		✓	
Soil Contamination		✓	
Stressed Vegetation			✓
Dead Fish, Other Animals			✓

ACTIONS TAKEN ON SITE: (Attach Map of Site Control Zones)

Was Entry Made by TAT: YES ✓ NO _____

TASK CONDUCTED: Describe Specific PPE Used and Why

TAT Monitored ERCS And Conducted Air Monitoring

"B" entry - product is a carcinogen, poisonous.

AIR MONITORING LOG

OVA Calibration See Site Instrument Log
HNU Calibration 11
OGI Calibration 11

Background O_2 20.8 %
Organics 1.0 units HNU
Radiation .2 mr/hr

OGI 0% LEL

(ATTACH CALIBRATION DATA TO LOG)

S I T E N A M E

STATION/ LOCATION	DATE	TIME	NAME OF AIR MONITOR	TYPE OF EQUIPMENT (HNU(PROBE/SPAN), OGI, OVA, RAD MTR	READING	SUMMARY/COMMENTS
Warehouse - Containers stacked on pallets (DP-1,2)	3/29/90	1210	Dunbar	Rad Mtr	.2 mr/hr	Background only.
				CGI	20.8 % 0% LEL	
			Sunderland	HNU - 11.7	2-3 units	floor near drums on pallets.

0123

24

AIR MONITORING LOG

OVA Calibration _____
HNU Calibration 7/31/90
OGI Calibration 7/31/90

Background O_2 20.5 %
Organics 1 unit
Radiation _____

OGI 0% LEL

(ATTACH CALIBRATION DATA TO LOG)

SITE NAME

STATION/ LOCATION	DATE	TIME	NAME OF AIR MONITOR	TYPE OF EQUIPMENT (HNU(PROBE/SPAN), OGI, OVA, RAD MTR	READING	SUMMARY/COMMENTS
						HOT/Humid, CLEAR SKY, Varing wind
Continuous air monitoring from the perimeter and staging area. Due to location both were at close proximity	7/31/90	0830 - 2000	DUNBAR	CGI	20.5 % O_2 0% LEL	All was conducted in a well Ventaled shed and outside
				HNU 11.7 probe	1-350 units	Elevated Readings were detected in the work zone area, but were significantly lower at the perimeter
				DRager (Carbon TET)	1-2 PPM	AT the perimeter

2 4 0124

AIR MONITORING LOG

OVA Calibration _____
HNU Calibration 8/1/90
OGI Calibration 8/1/90

Background O_2 20.5%
Organics 1-UNIT
Radiation _____

OGI 0% LEL

(ATTACH CALIBRATION DATA TO LOG)

S I T E N A M E

STATION/ LOCATION	DATE	TIME	NAME OF AIR MONITOR	TYPE OF EQUIPMENT (HNU(PROBE/SPAN), OGI, OVA, RAD MTR	READING	SUMMARY/COMMENTS
Perimeter	8/1/90	0730	DUNBAR	CGI	Background	from the perimeter
		1200		HNU 11.7	1-9 UNITS	Elevated readings were detected when wind direction changes and all personnel moved up wind.

DRAGER #EPA609024

DATE	Hold	20 sec	clean	tube type	comments location	Name
6/4/90	yes	20+	yes	—	0015	Moylan
6-28-90	yes	20+	yes	HCN	2793 (Reg V)	Hanlon
6-29-90	yes	20+	yes	HCN	2793 (Reg V)	Hanlon
7/30/90	yes	20	yes	carbon TET	3292	Dunbar
7/31/90	yes	20	yes	carbon TET	3292	Dunbar

4/25/90	OK	50ppm w/10.2 @9.8	50ppm w/10.2 @9.5	3214	WAYCASTER LAB SITE	DuBois
5/22/90	OK	50 PPM w/10.2 @ 9.8	50 PPM w/10.2 @ 9.5	3249	Taylorsville	Walls
5/29/90	Full	54 PPM @ 9.8 SPAN with 10.2 PROBE	54 PPM @ 9.8 SPAN with 10.2 PROBE	0015	Cleaned Bulb	HERNIK
6-2-90	OK	50 PPM W/10.2 PM With 10.2 Probe	50 PPM 9.8 SPAN With 10.2 Probe	3156	Carolina Chemical	WALKER
6/5/90	OK	55 PPM w 10.2 @ AT 9.8 SPAN	55 PPM AT 9.8 w/10.2 PROBE	0015	ADJUST INTRANGE	[illegible]
7/3/90	OK	55 PPM w/10.2 @ 9.8	55 PPM @ 9.8 WW 10.2 probe	3201	TOUCH CHANGED WITH US	BURKHALTER
[illegible]	OK	55 PPM w/ 10.2 @ 9.8	—		Gauge does [illegible]	[illegible]
7/16/90	OK	54 PPM @ 9.8 w 10.2 SPAN PROBE	54 PPM @ 9.8 SPAN With 10.2 PROBE	0015	CLEANED BULB - READJUSTED INTRANGE WAS READING 48 PPM	HERNIK
7/17/90	OK	55 PPM w/10.2 @ 9.8	WOULD NOT CALIBRATE W/ SPAN ADJUSTED TO 0	3362		McKEE
7/24/90	OK	60 PPM @ 5.0 w. 11.7 PROBE	58 PPM @ 5.0 w. 11.7 PROBE	0015	INTRANGE ADJ.	
7/30/90	Full	60 PPM @ 5.0 W 11.7 PPM PROBE	62. PPM @ 5.0 W 11.7 PROBE	3292	OFFICE CAL	[illegible] Dunbar
7/31/90	Full	60 PPM @ 5.0 W 11.7 PROBE	62. PPM @ 7.1 W 11.7 PROBE	3292	Field CAL HOT/Humid	Dunbar
8/01/90	Full	60 PPM @ 5.0 W11.7 Probe	62 PPM @ 3.5 W11.7 Probe	3292	Field cal. Hot/Humid	Dunbar

HNK # EPA 163601

24 0127

DATE	Pump	BAT	Low O_2	High O_2	LEL	Calc STD	Calc Read	PID	
6/4/90	OK	OK	19.5	24	25%	50% LEL	48% LEL	0012	
6/13/90	OK	OK	19.5	24	22%	50% LEL	50% LEL	0012 3285	Hill
6/20/90	ok	ok	19.5	25	22%	50% LEL	50% LEL	3311	Thomas
6/22/90	OK	OK	19.5	25	24%	50% LEL	46%	311	Hudgins field cal
6/24/90	OK	Batt OK	19.5	25	23%	50% LEL	50% LEL	3313	Caldwell
7/3/90	OK	BATT OK	19.5	25	25%	50% LEL	46%	0012	DJS
7/6/90	OK	BAT	19.5	25	25%	50% LEL	47%	3342	DJS
7/11/90	FM	new - replaced Battery				50% LEL	50%	3352	Patrick
7/16/90	OK	OK	OK	25	25%	50% LEL	50%	0012	Miller
7/20/90	OK	OK	19.5	25	25%	Repair - air leak		T. Burkhalter	
7/23/90	OK	OK	16%	need minor					
7/26/90	OK	OK	19.5	25	25%	50% LEL	50%	3665	Miller
7/30/90	OK	OK	19.5	24	25%	50% LEL 15% O_2	50% LEL 16% O_2	3292	Dunbar
7/31/90	OK	OK	19.5	24	25%	50% LEL 15% O_2	50% LEL 15% O_2	3292	Dunbar

CGF # EPA 638186

2 4 0128

SAMPLING: CONDUCTED? YES ✓ NO ____

If Yes, Describe Sampling Method Samples collected 29 MARCH 90 directly from a 1 gallon container of product. 9-16oz samples and 1 gallon sealed container. all samples are being stored at a local TSD until EPA determines future action

30 July 90 TAT COLLECTED NO SAMPLES

Has Lab Been Notified of Potential Hazard Level? Yes___ No___ NA ✓

Note: This Health and Safety Plan was prepared for work to be conducted under the Technical Assistance Team (TAT) Contract 68-01-7367 Zone 1. Use of this plan by WESTON and its subcontractors on the TAT contract is intended to fulfill the OSHA requirements found in 29 CFR 1910.120. Items not specifically covered in this plan are included by reference to 29 CFR 1910 and 1926.

I have read and understand this safety plan.

NAME (PRINTED)	SIGNATURE	AFFILIATION	DATE
Thomas J. Sunderland	Thomas J. Sunderland	WESTON	3/29/90
Scott W. Dunbar	Scott W. Dunbar	Weston	3/29/90
James Kopotic	James Kopotic	EPA	3/29/90
R. D. Rigger	R. D. Rigger	EPA-4	7/31/90
SAM Cooke	Sam Cooke	(W) HAZTech	7/30/90

Final Submission of Plan by Scott September Thomas J. Sunderland Scott W. Dunbar Date 8/2/90 3/31/90

Post Response Approval Kathleen M. Kennedy Date 5/22/90

Copy to ZPMO ____ Date ____

SPER HSO Reviewed by: ____ Date: ____
Followup Required: Yes___ No___
Followup Performed: Date: ____ With: ____
Comments: ____

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Requirements of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

It requires that a representative of the employer and a representative ed by the employees be given an opportunity to accompany the inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discrimination.

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory penalties against employers of up to $1,000 for each serious violation and for optional penalties of up to $1,000 for each nonserious violation. Penalties of up to $1,000 per day may be proposed for failure to correct violations within the proposed time period. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $10,000 for each such violation.

Criminal penalties are also provided for in the Act. Any willful violation resulting in death of an employee, upon conviction, is punishable by a fine of not more than $10,000, or by imprisonment for not more than six months, or by both. Conviction of an employer after a first conviction doubles these maximum penalties.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

Such voluntary action should initially focus on the identification and elimination of hazards that could cause death, injury, or illness to employees and supervisors. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free consultative assistance, without citation or penalty, is available to employers, on request, through OSHA supported programs in most State departments of labor or health.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, Georgia
Boston, Massachusetts
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Kansas City, Missouri
New York, New York
Philadelphia, Pennsylvania
San Francisco, California
Seattle, Washington

Telephone numbers for these offices, and additional area office locations, are listed in the telephone directory under the United States Department of Labor in the United States Government listing.

Washington, D.C.
1985
OSHA 2203

William E. Brock, Secretary of Labor

U.S. Department of Labor
Occupational Safety and Health Administration

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or a facsimile) in a conspicuous place where notices to employees are customarily posted.

SITE SAFETY PLAN AMENDMENT # 1 : _____

SITE NAME: CLARK BROS. WAREHOUSE

DATE: 7/26/90

TYPE OF AMENDMENT: SCOPE OF WORK CHANGE

REASON FOR AMENDMENT: TAT WILL BE REQUIRED TO CONDUCT AIR MONITORING PERIODICALLY DURING TRANSFER OPERATION'S

ALTERNATE SAFEGUARD PROCEDURES: LEVEL "B" WITH AIR MONITORING WITH HNU. 11.7 PROBE to determine Off site migration only.

REQUIRED CHANGES IN PPE: LEVEL "B", Viton gloves, coveralls, Hard hat and safety shield.

ERCS Response Manager	(Date)	ERCS Safety Officer	(Date)
Scott Dunbar	7/26/90	Kathleen M Kenny	7/26/90
Weston Lead TAT Member	(Date)	Weston RSO	(Date)
U.S. EPA OSC	(Date)	U.S. EPA Safety Officer	(Date)

ATTACHMENT F

Polreps

IPM-163-900807-142720226

2 4 0132

Polrep #1 and Final
Clark Brothers Warehouse Pesticide Removal
Albany, Dougherty County, Georgia

TO: Doug Lair

ATTN: Bruce Englebert

From: R. Donald Rigger

Date: 07 August 1990

I. Situation

In early December 1985, ICP Chemical requested Clark Brothers Warehouse to store numerous containers of Grain Fumigant #2 (82.3% Carbon tetrachloride, 16.3% Carbon disulfide, 1.0% Sulphur dioxide, and 0.4% pentane). The shipment was received on December 31, 1985 After not receiving payment for storage, Clark Brothers attempted to contact ICP Chemical and found that they had filed bankruptcy. A further investigation revealed that the material had been banned from shipment January 1,1986.

EPA was contacted by Mr. Chet Clark in April 1988. OSC Rigger and TAT conducted an investigation of the warehouse and determined that there was not an immediate threat. OSC Rigger instructed Clark Brothers to contact Air Pesticides and Toxic Substance Division within the EPA, for assistance. ICP Chemical had a previous history of abandoning materials in a similar manner.

March 1990, EPA was informed that the material was leaking and an investigation was conducted by OSC Kopotic and TAT. The investigation confirmed that the containers were deteriorating and material had been released to the environment.

II. Action Taken

On 30 July 1990, OSC Rigger, 1 TAT, and 6 ERCS personnel mobilized to the site, to bulk and dispose of 612 one gallon cans, 114 five gallons cans, and 62 fifty five gallon drums of Grain Fumigant #2. During the bulking process, approximately 100 one gallon cans and 2 five gallon cans were found empty.

On 31 July 1990, approximately 3300 gallons of Grain Fumigant #2 was shipped to Petro Chem Processing, Incorporated, Detroit, Mi. via tank truck. Due wieght restriction 715 gallons (13 fifty five gallon drums) remained at the site. The following day the empty containers were crushed and loaded in a 20 cubic yard roll off container for transportation to BFI's landfill in Fayetteville, Georgia.

III. Future Plans

To date all of the material, except for 13 fifty five gallon drums

of Grain Fumigant #2 have properly been disposed of. The ERCS contractor is currently arranging transportation for 13 drums. The disposal of the drums is expected with the two weeks.

Total Estimated Cost To Date $ 47,614.00

Total Estimated Remaining Ceiling 50%